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CLAIMS

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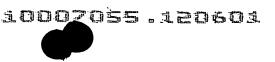
- A method of forming a composite, comprising:
 providing a strand comprising a plurality of fibers;
 exposing the strand to a stable emulsion comprising polymer particles; and allowing the particles polymer particles to penetrate gaps between individual fibers.
 - 2. The method of claim 1, wherein the penetration occurs to the extent that polymer particles substantially fill gaps between the individual fibers of the strand.
 - 3. The method of claim 2, further comprising the step of fusing the polymer particles to provide a polymer matrix embedding the individual fibers of the strand.
 - 4. The method of claim 3, wherein the fusing step comprises applying an elevated temperature to the particles.
 - 5. The method of claim 4, wherein the elevated temperature is greater than a minimum film-forming temperature.
- 20 6. The method of claim 3, wherein the fusing step comprises applying a pressure to the particles.
 - 7. The method of claim 6, wherein the pressure is no more than about 1750 kPa.
- 25 8. The method of claim 6, wherein the pressure is at least about 350 kPa.
 - 9. The method of claim 1, further comprising the step of drying the particles below a minimum film-forming temperature.
- 30 10. The method of claim 1, further comprising the step of repeating the exposing step at least once.



- 11. The method of claim 1, wherein the emulsion comprises polymer particles in water.
- 12. The method of claim 1, wherein the emulsion further comprises a surfactant.
- 5 13. The method of claim 1, wherein the emulsion has a solids content of no more than about 60%.
 - 14. The method of claim 1, wherein the emulsion has a solids content of no more than about 50%.
 - 15. The method of claim 1, wherein the emulsion has a solids content from about 5% polymer particles to about 60%.
- 16. The method of claim 1, wherein the emulsion has a solids content from about 5% polymer particles to about 50%.
 - 17. The method of claim 1, wherein the polymer particles have a mean diameter of no more than about 0.25 times the fiber diameter.
- 18. The method of claim 1, wherein the polymer particles have a mean diameter of no more than about 5 μm .
 - 19. An article, comprising:

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- a mixture comprising fibrous segments and polymer particles, a portion of the
 particles penetrating substantially all ends of individual fibers in the fibrous segments, and
 the entire article being substantially rigid.
 - 20. The article of claim 19, wherein the article is a prepreg.
- The article of claim 19, further comprising a plurality of porous segments wherein a portion of polymer particles substantially fill pores of the porous segments.



- 22. The article of claim 19, further comprising non-porous and non-fibrous fillers.
- 23. A composite, comprising outer layers of a fibrous sheet sandwiching a core comprising the article of claim 19.

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- 24. A composite, comprising a layer of a fibrous sheet enclosing a core comprising the article of claim 19.
- 25. A composite, comprising:a plurality of fibrous segments; anda polymer matrix embedding the fibrous segments and ends of individual fibers of the fibrous segments.
- 26. The composite of claim 25, wherein the polymer matrix embedding the fibrous segments comprises a core, the composite further comprising outer layers of a fibrous sheet sandwiching the core.
- 27. The composite of claim 25, wherein the polymer matrix embedding the fibrous segments comprises a core, the composite further comprising an outer layer of a fibrous sheet
 20 enclosing the core.